US007101001B1

(12) **United States Patent**
Chiu

(10) **Patent No.: US 7,101,001 B1**
(45) **Date of Patent: Sep. 5, 2006**

(54) **COUPLING DEVICE PREVENTING TWO DRAWERS FROM BEING PULLED OUT SIMULTANEOUSLY**

(76) Inventor: **I Hsiang Chiu**, 11, Alley 52, Lane 413, Ying Tao Rd., Ying Ghor Town, Taipei County (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **11/150,537**

(22) Filed: **Jun. 13, 2005**

(51) **Int. Cl.**
E05C 7/06 (2006.01)

(52) **U.S. Cl.** **312/221**; 312/217

(58) **Field of Classification Search** 312/216, 312/217, 218, 219, 220, 221, 222, 330.1, 312/107.5; 292/DIG. 18
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

3,454,320	A *	7/1969	Olree	312/217
6,238,024	B1 *	5/2001	Sawatzky	312/221
6,296,332	B1 *	10/2001	Lammens	312/217
6,568,771	B1 *	5/2003	Gentili et al.	312/221
6,932,445	B1 *	8/2005	Chiu	312/221
6,957,877	B1 *	10/2005	Chiu	312/221

FOREIGN PATENT DOCUMENTS

CH	289618	*	3/1953	312/217

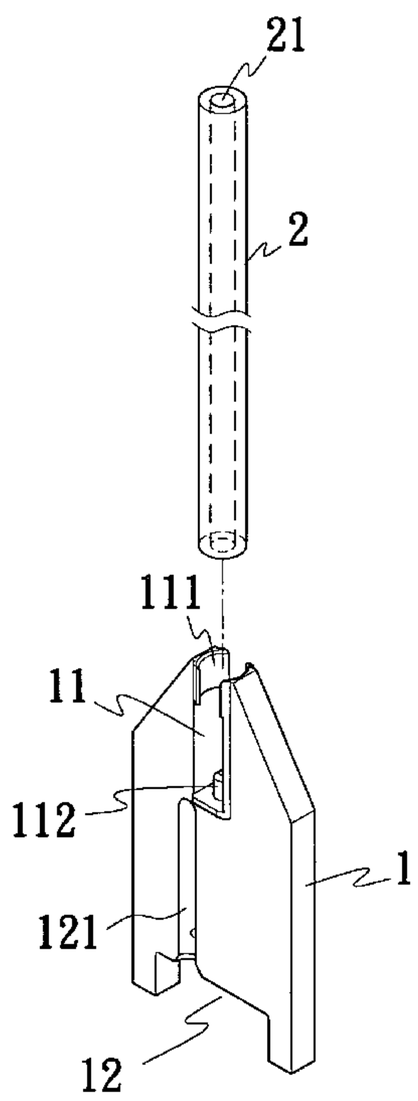
* cited by examiner

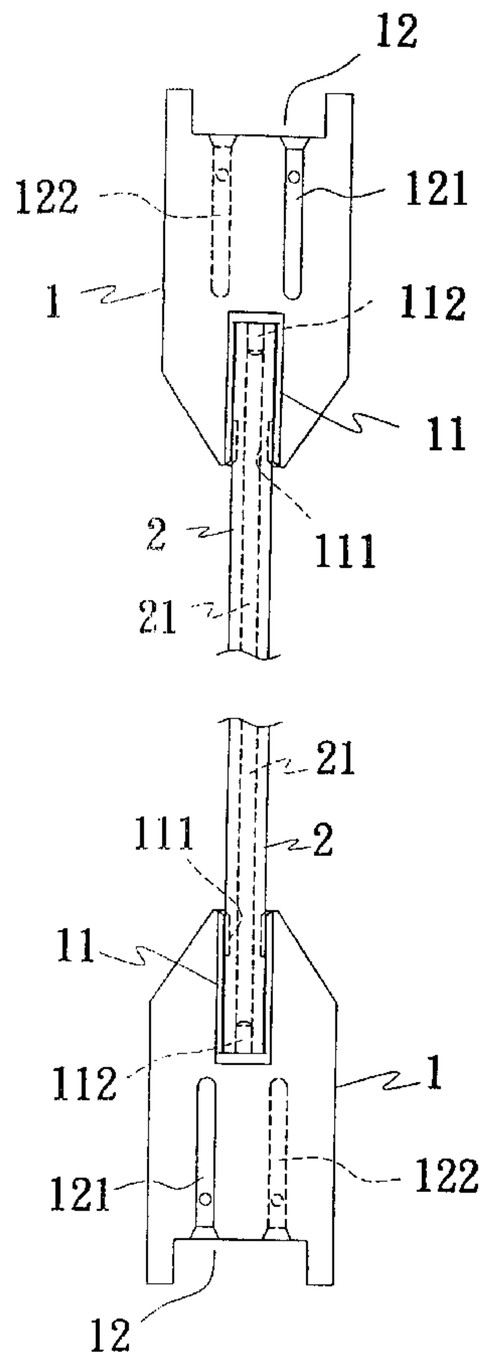
Primary Examiner—James O. Hansen
(74) *Attorney, Agent, or Firm*—Troxell Law Office, PLLC

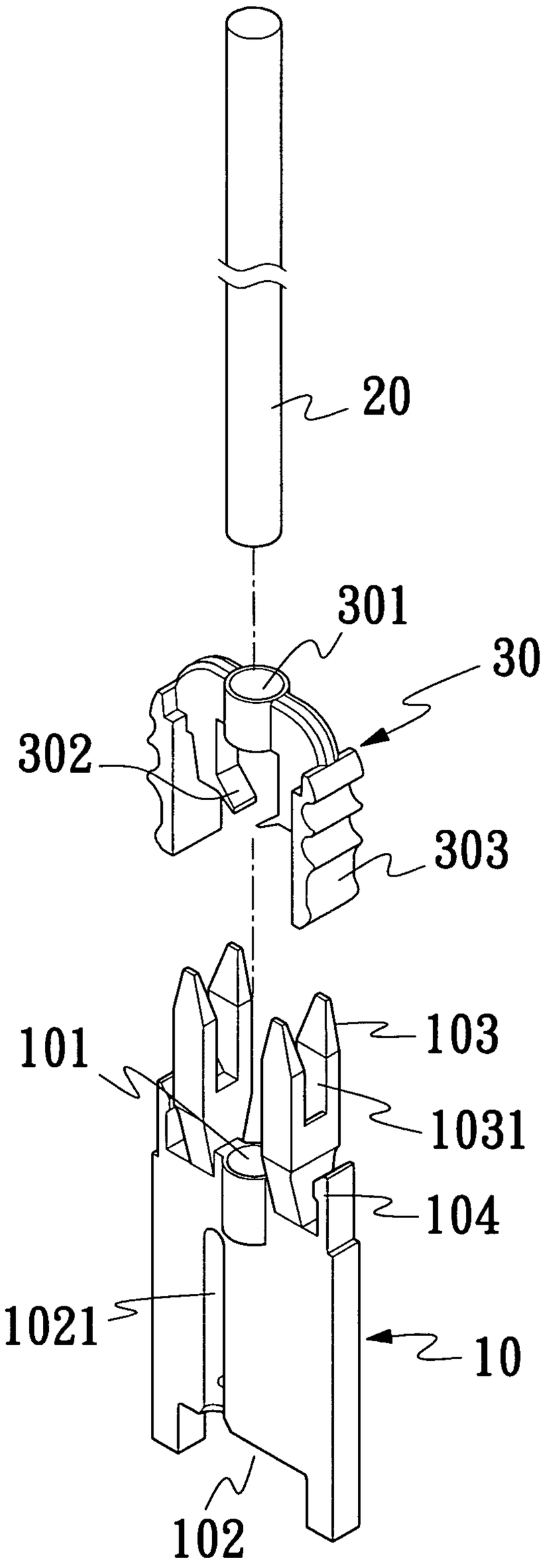
(57) **ABSTRACT**

A coupling device preventing two drawers from being pulled out simultaneously includes two flat main bodies and a coupling pipe. Each of the main bodies is provided at two opposite ends with a centered vertical recess and a horizontal recess, respectively. The centered vertical recess is provided in an open end with two opposite curved flanges, and at a closed bottom end with a projected post. The coupling pipe has an axially centered through hole, into two ends of which the projected posts in the vertical recesses of the two main bodies are inserted, so that each end of the coupling pipe is clamped between the two flanges on each main body to enable a stable connection of the main body to the coupling pipe.

2 Claims, 6 Drawing Sheets

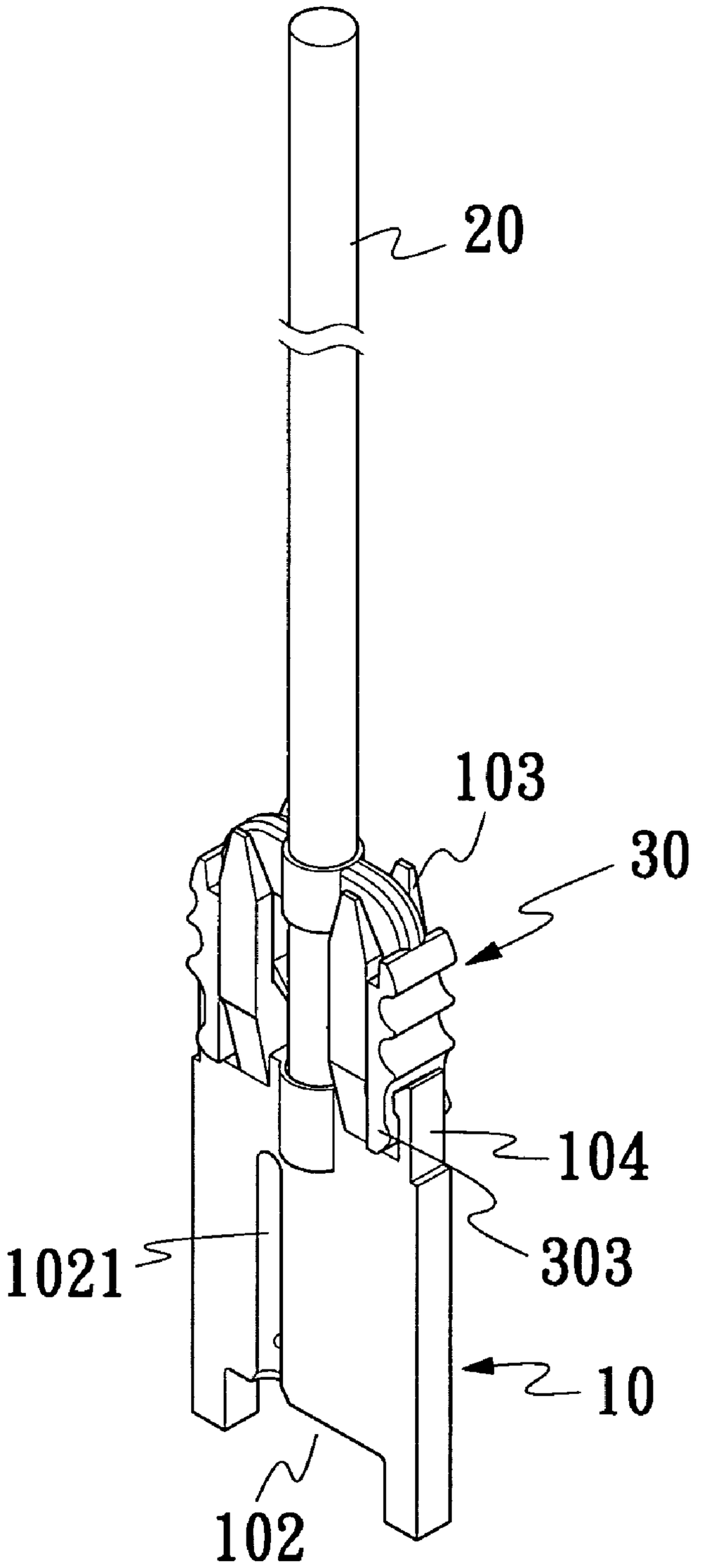






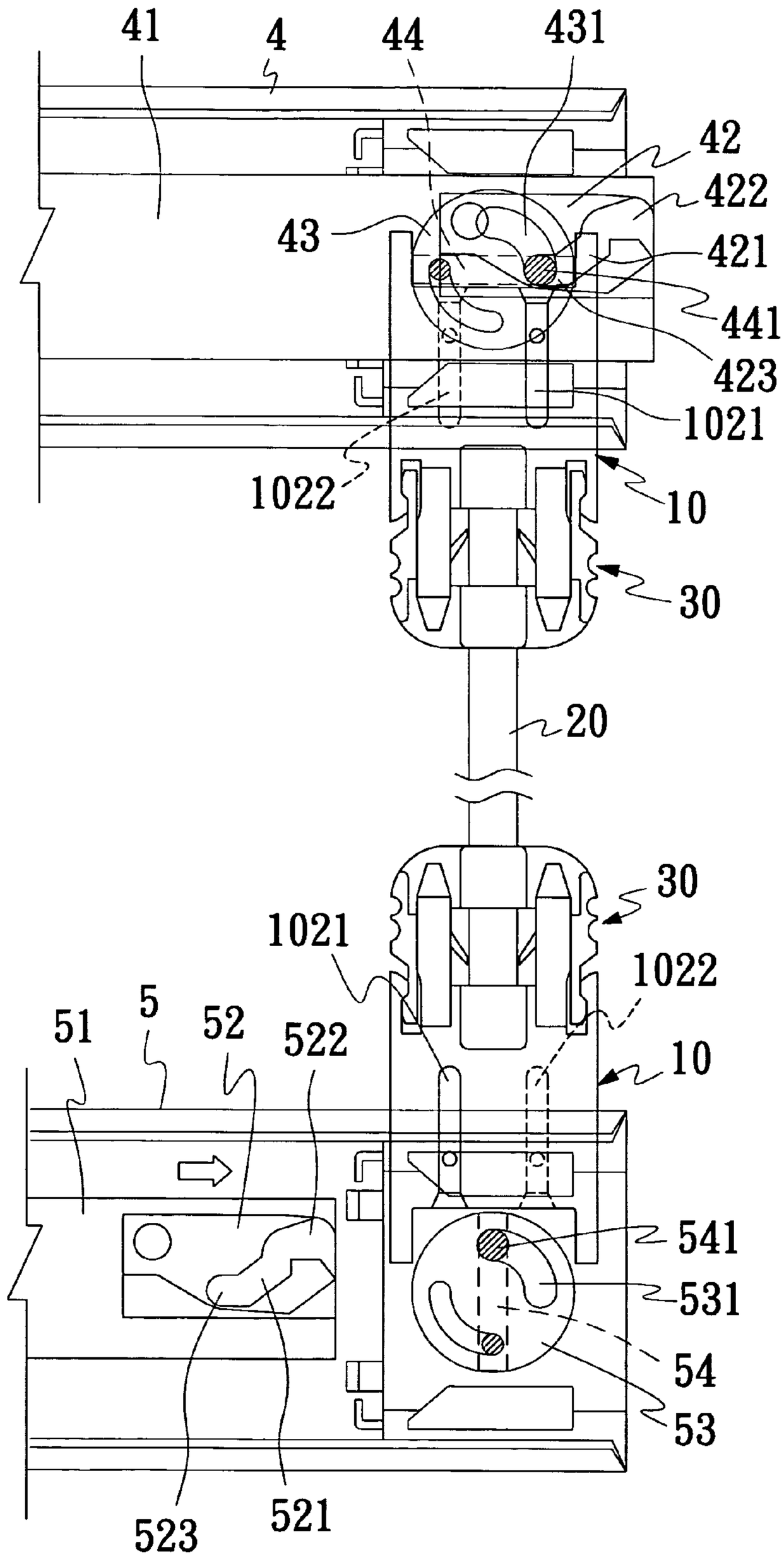
(PRIOR ART)

Fig. 1



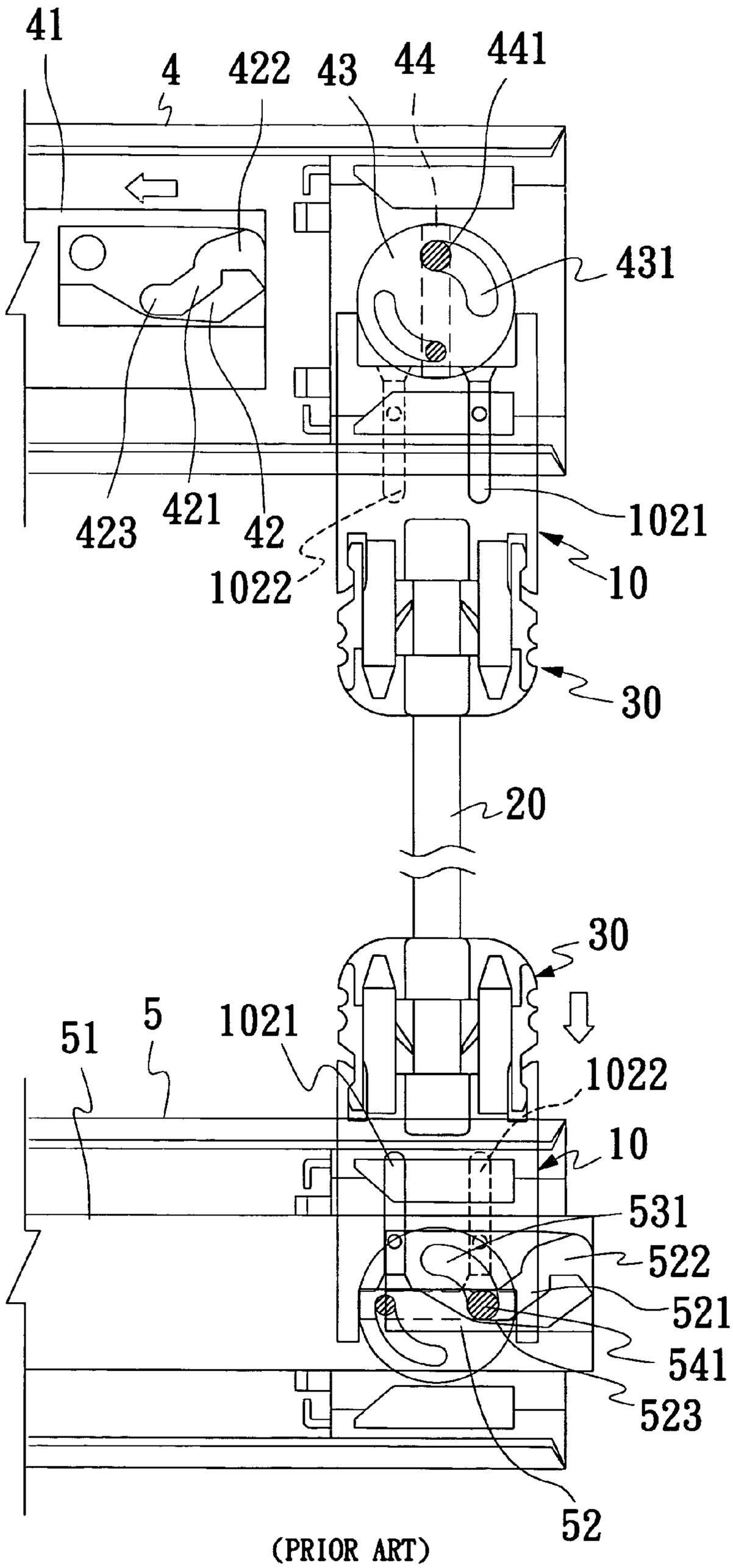
(PRIOR ART)

Fig. 2



(PRIOR ART)

Fig. 3



(PRIOR ART)

Fig. 4

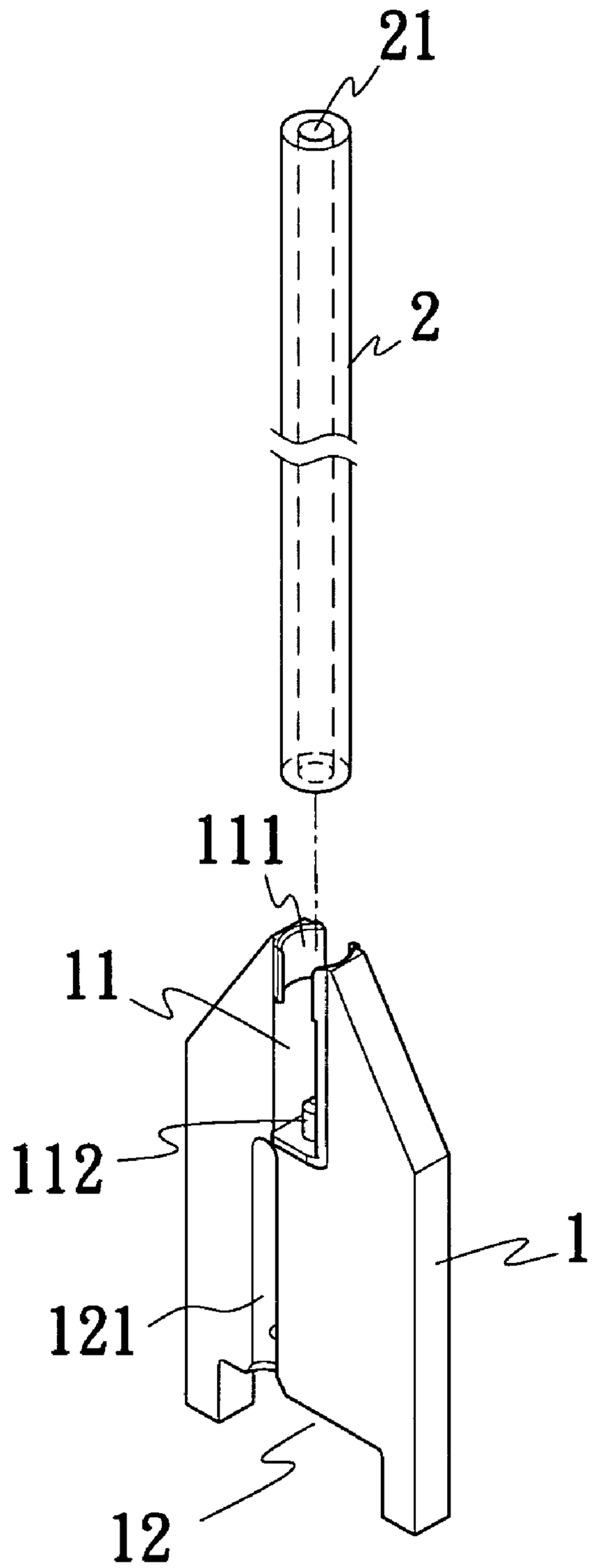


Fig. 5

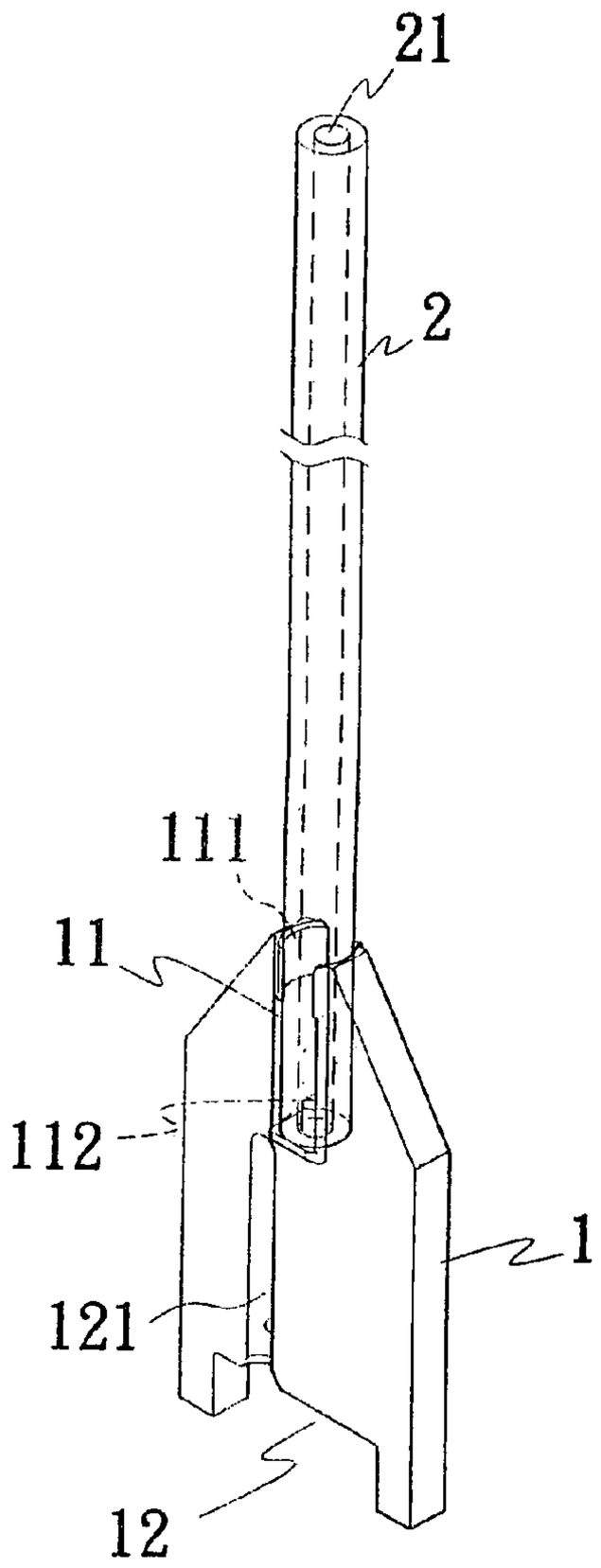

21
2
111
11
112
1
121
12

Fig. 6

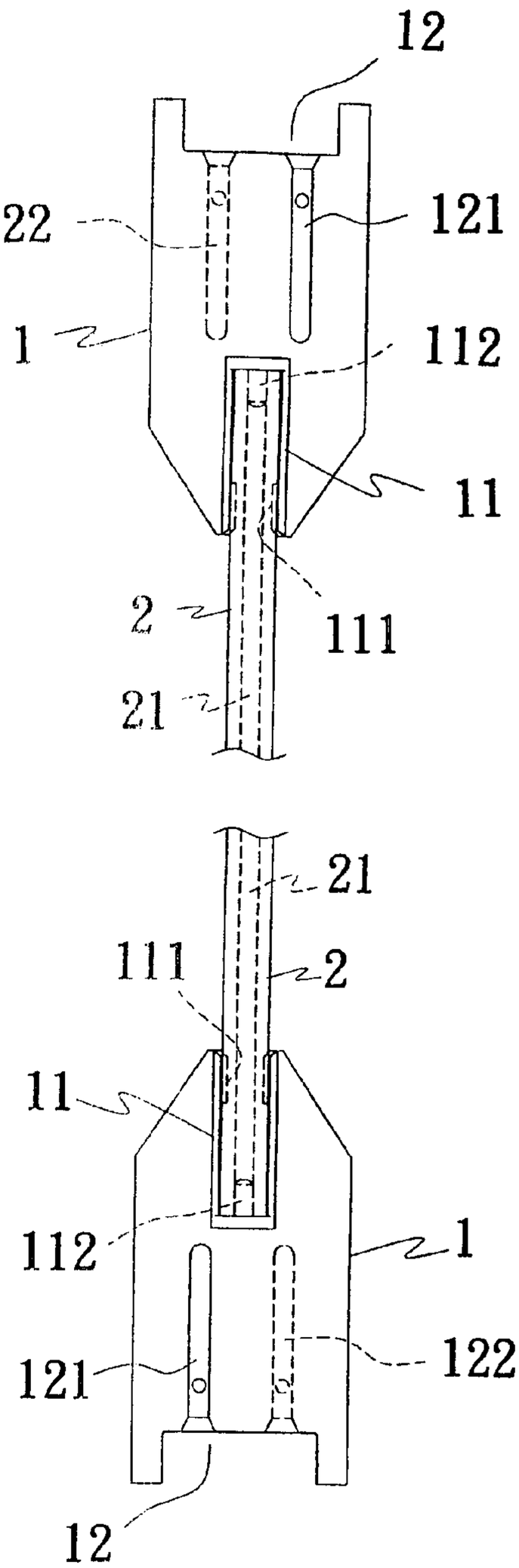

12
122
121
1
112
11
2
111
21
21
111
2
11
112
1
121
122
12

Fig. 7

COUPLING DEVICE PREVENTING TWO DRAWERS FROM BEING PULLED OUT SIMULTANEOUSLY

FIELD OF THE INVENTION

The present invention relates to a coupling device preventing two drawers from being pulled out simultaneously, and more particularly to a coupling device that has simplified structure and can be easily assembled to effectively prevent two drawers from being pulled out simultaneously.

BACKGROUND OF THE INVENTION

A conventional coupling device preventing two drawers from being pulled out simultaneously, as shown in FIGS. **1** and **2**, mainly includes a main body **10** connected to each end of a solid link **20** via a connecting element **30**. The main body **10** is provided at two opposite ends with a receiving hole **101** and a horizontal recess **102**, respectively. A clamping portion **103** providing a clamping slot **1031** is formed at each lateral side of the receiving hole **101**; and an inward extended hook portion **104** is formed at the outer side of each clamping portion **103**. Two offset guide channels **1021**, **1022** are formed at front and rear side surfaces of the main body **10**, respectively, to extend from the horizontal recess **102** to a middle section of the main body **10**. The connecting element **30** is a substantially inverted U-shaped member having a centered through hole **301**. Two inward extended middle clamping portions **302** are formed at two lateral lower sides of the through hole **301**, and two sideward projections **303** with increased width and thickness are formed at two lateral ends of the connecting element **30**. As can be seen from FIG. **2**, the connecting element **30** is connected to the main body **10** through engagement of two arm portions at two lateral sides of the through hole **301** with the clamping slots **1031** of the clamping portions **103**, and the sideward projections **303** with the hook portions **104**. The solid link **20** is connected to the main body **10** and the connecting element **30** by extending an end of the link **20** through the through hole **301** on the connecting element **30** into the receiving hole **101** on the main body **10**, such that the end of the link **20** is clamped between the two middle clamping portions **302**. In this manner, each end of the link **20** has a main body **10** and a connecting element **30** connected thereto.

FIGS. **3** and **4** show the operation of the conventional coupling device of FIG. **2**. The coupling device assembled from the main bodies **10**, the connecting elements **30**, and the link **20** is mounted between the rear ends of an upper and a lower sliding rail **4**, **5**. An upper and a lower drawer **41**, **51** are slidably mounted on the upper and the lower sliding rail **4**, **5**, respectively, to move inward or outward. The upper and the lower drawer **41**, **51** are provided at respective rear end of at least one sidewall with a guide slide **42**, **52** each. The guide slides **42**, **52** include a guide slot **421**, **521** each, which has an open-end upper section **422**, **522** and a closed-end lower section **423**, **523**.

A circular disk **43** having two curved guide slots **431** extended along an outer edge thereof is provided at each side of the rear end of the upper sliding rail **4**, and a stopper **44** is laid between the two disks **43**. Two ends of the stopper **44** are provided with a sideward protrusion **441** each, so that the sideward protrusions **441** extend into the curved guide slots **431** on the disks **43**. Similarly, a circular disk **53** having two curved guide slots **531** extended along an outer edge thereof is provided at each side of the rear end of the lower sliding rail **5**, and a stopper **54** is laid between the two disks **43**. Two ends of the stopper **44** are provided with a sideward protrusion **541** each, so that the sideward protrusions **541** extend into the curved guide slots **531** on the disks **53**.

When the lower drawer **51** mounted on the lower sliding rail **5** is pulled outward while the upper drawer **41** mounted on the upper sliding rail **4** is in a fully pushed-in position, the sideward protrusions **441** are guided by the guide slot **421** on the guide slide **42** to slide along the curved guide slots **431** to a lower location, such that the stopper **44** is in a horizontal position to fitly attach to a bottom of the horizontal recess **102** on the main body **10**. Meanwhile, the sideward protrusions **541** are guided by the guide slot **521** on the guide slide **52** to slide along the curved guide slots **531** to an upper location, such that the stopper **54** is in a vertical position to press against a bottom of the horizontal recess **102** on the main body **10** at the other end of the link **20**. Since the stopper **54** is pressed against the bottom of the horizontal recess **102**, the main body **10** mounted on the rear end of the lower sliding rail **5** is prevented from being pushed downward. At this point, the stopper **44** is prevented from being turned, and the upper drawer **41** is in a locked state and could not be pulled out, as shown in FIG. **3**. When the lower drawer **51** is pushed inward at this point, the sideward protrusions **541** are guided by the guide slot **521** on the guide slide **52** to slide along the curved guide slots **531** to a lower location, bringing the vertical stopper **54** into a horizontal position without pressing against the bottom of the horizontal recess **102** on the main body **10**, so that the upper drawer **41** is released from the locked state. Reversely, when the upper drawer **41** is pulled outward, the lower drawer **51** is brought into a locked state, as shown in FIG. **4**. With the above arrangements, the upper and the lower drawer **41**, **51** may be effectively prevented from being pulled out simultaneously to cause any danger.

The conventional coupling device preventing two drawers from being pulled out simultaneously assembled from the main bodies **10**, the link **20**, and the connecting elements **30** includes a plurality of components that have different shapes and complicate structure and therefore require high R&D and management cost, which inevitably reduces the competing ability of the coupling device in the market. It is therefore tried by the inventor to develop an improved coupling device preventing two drawers from being pulled out simultaneously that has simplified structure to enable easy assembling and reduced manufacturing cost to overcome the problems existed in the conventional coupling device.

SUMMARY OF THE INVENTION

A primary object of the present invention is to provide an improved coupling device preventing two drawers from being pulled out simultaneously that has simplified structure to enable easy assembling and effectively reduced manufacturing cost thereof.

The coupling device according to the present invention includes two flat main bodies and a coupling pipe. Each of the main body is provided at two opposite ends with a centered vertical recess and a horizontal recess, respectively. The centered vertical recess is provided at a closed bottom end with a projected post. Two offset guide channels are located at two opposite side surfaces of the main body to vertically extend from the horizontal recess to a middle section of the main body. The coupling pipe has an axially centered through hole, two ends of which are inserted into

the vertical recesses on the two main bodies to engage with the projected posts, enabling the main body to stably connect to the coupling pipe.

To enable an effectively enhanced strength at joints of different parts, the coupling device preventing two drawers from being pulled out simultaneously according to the present invention is further provided at two opposite inner walls of an open end of the vertical recess on each main body with a radially inward protruded curved flange each, so that each end of the coupling pipe is stably clamped between the two flanges.

BRIEF DESCRIPTION OF THE DRAWINGS

The structure and the technical means adopted by the present invention to achieve the above and other objects can be best understood by referring to the following detailed description of the preferred embodiments and the accompanying drawings, wherein

FIG. **1** is an exploded perspective view of a conventional coupling device preventing two drawers from being pulled out simultaneously;

FIG. **2** is an assembled view of FIG. **1**;

FIGS. **3** and **4** shows the operation of the coupling device of FIG. **2**;

FIG. **5** is an exploded perspective view of a coupling device preventing two drawers from being pulled out simultaneously according to the present invention;

FIG. **6** is an assembled view of FIG. **5**; and

FIG. **7** is an assembled plan view of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

FIGS. **5**–**7** show a coupling device that includes two flat main bodies **1** assembled to two ends of a coupling pipe **2**.

FIG. **5** shows an exploded perspective view of a coupling device preventing two drawers from being pulled out simultaneously according to the present invention.

Each main body **1** is provided at two opposite ends with a centered vertical recess **11** and a horizontal recess **12**, respectively. The centered vertical recess **11** is provided at two opposite inner walls of an open end thereof with a radially inward protruded curved flange **111** each, and at a closed bottom end with a projected post **112**. Two offset guide channels **121**, **122** located at two opposite side surfaces of the main body **1** are vertically extended from the horizontal recess **12** to a middle section of the main body **1**. The coupling pipe **2** has an axially centered through hole **21**.

FIGS. **6** & **7** show assembled perspective and plan views, respectively, of the present invention. To assemble the coupling device, simply insert an end of the coupling pipe **2** fully into the vertical recess **11**, and the coupling pipe **2** is clamped between the two curved flanges **111** with an opening of the through hole **21** at that end tightly engaged with the projected post **112** at the bottom of the vertical recess **11**, enabling the main body **1** and the coupling pipe **2** to stably and firmly connect together. The other main body **1** may then be connected to the other end of the coupling pipe **2** in the same manner.

The present invention has been described with a preferred embodiment thereof and it is understood that many changes and modifications in the described embodiment can be carried out without departing from the scope and the spirit of the invention that is intended to be limited only by the appended claims.

What is claimed is:

1. A coupling device preventing two drawers from being pulled out simultaneously, comprising:

two flat main bodies, each of the two flat main bodies being provided at two opposite ends with a centered vertical recess and a horizontal recess, respectively; said centered vertical recess includes a closed bottom end with a projected post extending upwardly from the closed bottom end, each of the two flat main bodies further including two offset guide channels being located at two opposite side surfaces that extend vertically from said horizontal recess to a middle section of said main bodies; and

a coupling pipe having an axially centered through hole, each projected post being inserted into the through hole at opposite ends of the coupling pipe to ensure a tight fit, such that the two flat main bodies are stably connected to the coupling pipe.

2. The coupling device preventing two drawers from being pulled out simultaneously as claimed in claim **1**, wherein said centered vertical recess is provided at two opposite inner walls of an open end thereof with a radially inward protruded curved flange each.

* * * * *